1752.—The most dreadful hurricane.
1783.—A hurricane of much less violence.
1804, September 7.—A hurricane and high water that did great damage.
December, 1811–February, 1812.—A series of earthquakes producing much alarm, but no great damage.
1813, August 27.—A fearful hurricane, doing great damage; the water rose 18 inches higher than in the corresponding gale of 1804.
1822, September 27.—Destructive hurricane.
1854, September 7.—Violent gale.
1875, September 28.—Severe gale.
1885.—Destructive hurricane.
1886, August 31.—Fearful earthquake.
1893, August 27–8.—One of the most destructive hurricanes.

The paths of West Indian hurricanes, including those that sometimes develop in the Gulf of Mexico, are liable to strike any point of the Gulf or south Atlantic coasts. On the average, there must be three or four hundred such storms in every century, and if these were distributed uniformly along this stretch of coast, 3,000 miles in length, we should have an average of one per century for every 100 miles. But the coasts of Georgia, South Carolina, and North Carolina have probably twice as many of these storms per square mile per century as occur on other portions of these coasts. When we go farther north, into the Middle States, New England, and the Lake region, there are few hurricanes, but the number of severe storms is much larger, owing to the fact that we have here another type of storm, viz, that which passes from the Pacific coast eastward toward Newfoundland.

HIGH TIDES AND APPROACHING STORMS.

Mr. F. Napier Dennison who is now living in Victoria, B. C., in a recent letter says:

I am getting most interesting records from my hydroaerograph records, especially before certain types of storms, as well as the secondary undulations. I often observe abnormally high tides before some of the great Pacific storms strike our coast.

CUMULUS CLOUDS ABOVE FIRES.

Referring to the MONTHLY WEATHER REVIEW, October, 1900, page 433, Mr. R. M. Hoskinson, Voluntary Observer at Waycross, Ware County, Ga., under date of January 16, says:

During a residence of twelve years in Osage County, Kans., I have often seen the dense smoke rising from the burnt grass ascend in cloud-like forms. The tops of some of these show white, like cumulus clouds. In order to be seen thus, the observer must be quite a distance away—a half mile or more—standing with his back to the sun.

Mr. H. H. Ten Broeck of Braidentown, Fla., under date of January 7, 1901, says:

I have often seen columns of smoke capped by cumulus clouds; this has always been when there was little or no wind, the smoke ascending nearly vertically. I have seen them on the prairies of Minnesota and other regions. A few days ago I saw the greatest development. A large brush fire was burning some three miles off, sending up a dense column of smoke, almost vertical. On the top of the column was a mass of cumulus cloud with its peculiar dense convolutions, and blending below with the smoke. Smoke clouds never show the pure brilliant white that cumulus clouds do and they are of a different texture, too, so that it is impossible to mistake one for the other. I have not the least doubt, therefore, but that Mr. Mitchell is right in reporting a cumulus cloud on the smoke of the fire at Bayonne, N. J.

LIGHTNING WITHOUT THUNDER.

Under date of January 17, 1901, Mr. Ten Broeck, of Braidentown, Fla., says:

On page 429 of the REVIEW for October, you publish some observations on lightning without clouds. I have known of lightning without thunder. A house next door was struck; I saw a blinding flash simultaneous with a splitting sound and waited for the crash of thunder, which did not come. The house, which was about 20 feet from the one I was in, was struck on the peak of the roof. The discharge followed the shingles about halfway to the eaves, splitting them up; it then turned and went over the gable and into the house, and so on down to the cellar, stunning the occupants, but not doing much damage.

A friend told me he had a similar experience. He was going along the street during a thunderstorm; there was a bright flash, accompanied by a rumbling noise, as he was passing a house, but no thunder. On looking to find the cause of the peculiar sound, he saw that the chimney had been struck and knocked to pieces, the bricks falling on the roof made the rumbling noise that had attracted his attention; but he was astonished that there was no thunder.

AZTEC NAMES AND THEIR PRONUNCIATION.

Messrs. F. P. Hoeck & Company, of the City of Mexico, writing to the Chief of Bureau in reference to the spelling and pronunciation of the names of the two famous volcanoes Popoca-teptetl and Iztac-cihuatal say:

Each word is two words in itself, and in pronouncing them it should be born in mind that the first word, *Popoca*, is accented on the second syllable (*po*); the second word, *tepetl*, is accented on the first syllable (*te* or *tay*). *Iztac* is accented on the second syllable (*tac* or *tak*); *cihuatl* is accented on the first syllable (*ci* or *see*); *hu* has the sound of w, or rather is the equivalent of w in English.

The above spellings are as promulgated by the Board on Geographic Names, in their last report. But this is the first time that we have seen any authoritative statement as to the proper pronunciation.

REDUCTION OF THE BAROMETER TO STANDARD GRAVITY.

At the International Meteorological Conference at Munich in 1891 the following resolution was unanimously passed:

It is recommended to all meteorologists to publish barometric readings reduced to normal gravity as soon as possible, starting from the 1st of January, 1901; moreover, in all tables and charts it should be specifically stated that this correction has been applied. At the head of the tables the adopted value of the reduction to normal gravity should be given in such a manner that one can recognize it immediately with an error not greater than one-tenth millimeter

The Weather Bureau, after many years of argumentation pro and con, adopted the reduction to standard gravity in 1885, but gave it up in 1886, through the mistake and opposition of one person. On January 1, 1899, as has been already announced in the MONTHLY WEATHER REVIEW (see December, 1898, page 550), the use of this important reduction again began and will, doubtless, continue hereafter in accordance with the urgent resolutions of the various meteorological congresses. The readers of the MONTHLY WEATHER REVIEW scarcely need to be reminded that the aneroid barometer is not affected by the variations of gravity, while the standard mercurial barometer is so affected.

The meteorological committee of the International Congress, in its recent meeting at Paris, adopted the following resolutions for the guidance of the international cooperating meteorological services:

1. Beginning with January 1, 1901, and for all stations whose observations are transmitted by telegraph to the central services, the barometric readings should always be reduced to standard gravity.
2. In published tables of observations it will be indicated whether

the barometric readings have been reduced to normal gravity, and also the value of the adopted corrected term, if the readings have been reduced, or the corrections that should be applied to the tabulated numbers in case they have not been so reduced.

HURRICANES IN JAMAICA, W. I.

In a supplement to his second volume of Jamaica Meteorological Observations, Mr. Maxwell Hall published a list of hurricanes and other phenomena occurring in Jamaica from the earliest dates up to the beginning of his regular work in 1880. Owing to the difficulty of making this complete and correct, he has requested that any additions and corrections may be communicated to him. The following is a list of the dates of hurricanes or severe storms only, omitting the descriptive text which Mr. Hall quotes in full. As his list already corrects errors that had crept into Keith Johnson's Physical Atlas, the reader will miss several hurricanes that are popularly credited to Jamaica:

1689, this hurricane was not very severe; 1712, August 28; 1714, August 29; 1722, August 28; 1726, October 22; 1743, October 20; 1751, September 2; 1772, August 31; 1780, October 3; 1781, August 1; 1784, July 30; 1785, August 27; 1786, October 20; 1812, October 12; 1813, August 28; 1815, October 18–19; 1818, November 18–20; 1832, August 7; 1837, September 26–27; 1874, October 31–November 2; 1880, August 18.

COMMERCIAL IMPORTANCE OF STORM AND WEATHER FORECASTS.

A recent decision of the United States circuit court of appeals (fourth circuit, No. 327), rendered on November 8, 1900, has been quite widely commented on by the daily press and is, indeed, worthy of general notice by the mercantile community. It appears that the first decision of the district court of the United States for the district of South Carolina held a vessel and its owners liable for damages to its cargo owing to their failure to observe the weather forecasts and provide protection against rain. The circuit court of appeals reversed this decision and decided that the failure to observe the *rain forecasts* did not constitute negligence in any of the business relations of life, while at the same time recognizing the fact that the masters of vessels are in duty bound to observe the *storm warnings*. As the whole course of the argument is eminently temperate and fair, we reproduce it in full. The result must serve to stimulate the students of meteorology to hasten the perfection of that science whose study has so recently been taken up in the proper way and whose results must be so important to mankind:

The record shows that the German steamship *St. Georg* arrived in Charleston Harbor on the evening of Thursday, the 21st of July, 1898, having on board as part of her cargo 3,039 bags of rice consigned to the libellant, Wilmot D. Porcher, of the City of Charleston, one-half of which was to go to the customhouse; the other half the consignee intended to deposit at his own store. On Friday, the 22d of July, due notice was given the consignee, Porcher, that the vessel would begin to discharge her cargo at 7 o'clock on the morning of July 23. The bill of lading provided that the goods were "to be delivered subject to the terms and conditions stated in this bill of lading, which constitute the contract between the shippers and the company, in like apparent good order and condition from the ship's deck (where the ship's responsibility shall cease) at the port of Charleston, S. C." "Also to discharge the goods from the steamer as soon as she is ready to unload into hulk, or temporary depot or lighter, or a wharf, at the shipper's or consignee's risk and expense after they leave the ship's deck. The goods to be received by the consignee as fast as the steamer can deliver them, and any extra charges incurred after being discharged, necessary for the steamer's quick dispatch, to be paid by the owner or consignee of the goods." The steamer began to discharge about 7:30 a. m., of July 23. The agent of the consignee was sent to receive and remove the goods and reached the wharf about 8 a. m. Porcher, the consignee, went to the wharf about 10 a. m. Klinck, the agent, had ordered a number of drays to remove the rice, but only two had reported at the time he arrived, the others not coming until about 11 o'clock. There were present at the unloading, besides the agent and libellant, the agents of several other consignees. The ship was being discharged at an uncovered wharf, which had previously been used for unloading and discharging perishable goods. The rice was at first piled indiscriminately on the wharf, but on complaint being made, after 50 or 60 bags had been landed, the rice belonging to the separate consignees was put into separate piles. The wharf was, to some extent, obstructed by some railroad cars and by some piles of pig iron and resin for outward cargo; the entrance to the wharf was by a narrow gateway; these obstructions impeded the handling of a large number of drays at the same time. There was at the shore end of the wharf a granary, which the agent of the railroad company, the owner of the wharf, told Porcher he could use to protect his rice in the event of rain. A forecast of the weather for Saturday, July 23, was inserted in the News and Courier, a newspaper published in Charleston. It was the custom of the Weather Bureau to distribute these forecasts generally throughout the city and to post them in about fifty places in Charleston. The forecast from the Bureau at Washington for South Carolina was: "On Saturday, showers and thunderstorms; warmer," etc. The local forecast for Charleston and vicinity was: "Light showers, with a probable moderate thunderstorm, followed by fair late in the day," etc. The morning of July 23 was clear until about 11 o'clock, when there came up suddenly a thunderstorm and a heavy fall of rain, lasting over an hour. The precipitation was 1.60 inches. There had been rain on the evenings of the 20th, 21st, and 22d of July, varying in time from 4 p. m. to 10 p. m. The precipitation on the 20th was .15 of an inch. On the 21st less than one-hundredth of an inch, and on 22d .20 of an inch. There were light rainfalls 25th and 26th of July. When the rain began on the 23d, the rice on the wharf was covered with tarpaulins, but owing to the heavy downpour they did not afford protection. Some of the rice was damaged before it could be gotten under cover, and some by the water running under the bags on the wharf. Neither the consignee nor his agent, nor the agents of the other consignees, previous to the discharge of cargo nor at the time of the discharge, made any objection to the wharf or to the time or the manner of unloading the rice and placing the same on the wharf.

The district court entered a decree for damages in favor of the libellant. The judge of the court below bases the decree on the negligence of the master in unloading the goods on an uncovered wharf in the face of a threatened storm without making effective preparations for protecting the goods for such time as would afford the consignee fair opportunity for removing the same. This he holds to be culpable carelessness, not justified by any necessity, as covered piers were available. And, further, that it was not proved to his satisfaction that the consignee had fair opportunity to examine the rice, to separate it, and remove it before the rain commenced. The correctness of this decision must be determined by those provisions of the bill of lading which provided for the delivery of the goods. These constitute the contract of delivery, and by this agreement construed in the light of principles pertaining to special contracts of affreightment the parties are bound. It is clear and specific in its terms. It states that the goods are to be delivered in good order and condition from the ship's deck, where the ship's responsibility shall cease, at the port of Charleston.

Also, that the steamer is "to discharge the goods as soon as she is ready to unload into hulk * * * or on a wharf at shipper's or consignee's risk and expense after they leave the ship's deck."

Under this contract, the liability of the ship for the safety and security of the goods ceased when the goods were landed on the wharf, the consignee being present and accepting the goods as delivered from the ship's tackle. In the absence of the consignee without notice, where there is a general bill of lading, it is the duty of the master to land the goods at a suitable wharf at a proper time and give the consignee reasonable time after notice to remove the goods. But this doctrine is not applicable to the case at bar, though this is the view urged by the counsel for libellant, and is the view taken by the court below. We must determine this case on the principles applying where the consignee has had due notice, is present in person or by his agent during the delivery, and is engaged in receiving the goods. There is no usage shown as to the delivery of goods at the port of Charleston to change the general rule as to the responsibility of the carrier.

The reason of the difference in the degree of liability of the carrier for the safety of the goods, after their landing from the ship, where the consignee is present, receiving them, and where he is absent at the time of discharge, is that in the former case he has an opportunity, if the goods are not being delivered at a proper place and time and in a proper manner, to object to the delivery. In the latter case he has not that opportunity, and the general maritime usage extends the responsibility of the carrier, as to the protection of the property, after it passes from the ship's deck to the wharf. Contracts of affreightment, in effect the same as that made in this case, have been construed in a number of decisions. The *Santee*, 7 Blatchford, 186, Fed. Cases No. 12330, is a case frequently cited in admiralty decisions, and quoted by text writers on the law of carriers. The law as expressed in that decision is thus stated in Hutchinson on Carriers, 2d Edition, 430, note; The *Santee*, Fed. Cases, No. 12330. 5 Myer's Federal Decisions, 407: